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1992/03/28

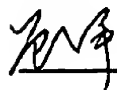
SUPPLEMENT

REGARDING CHANGES IN SEISMIC EQUIPMENT AND
ADDITIONAL MATTERS
TO THE
AGREEMENT-IN-PRINCIPLE BETWEEN THE
STATE SEISMOLOGICAL BUREAU
OF THE PEOPLES REPUBLIC OF CHINA AND THE UNITED STATES
GEOLOGICAL SURVEY FOR UPGRADES TO THE
CHINA DIGITAL SEISMOGRAPH NETWORK

Both sides, the State Seismological Bureau (SSB) of the People's Republic of China and the United States Geological Survey (USGS), will continue to honor the responsibilities stipulated in the Agreement-in-Principle between the SSB and the USGS for Upgrades to the China Digital Seismograph Network (CDSN), with the following supplement as the addition to the Agreement-in-Principle with the consent of both sides.

1. Both sides agree that the equipment specified in the Agreement-in-Principle to be provided at stations of the CDSN should be replaced by the equipment specified on the list attached to this supplement. The equipment on this list will be provided at each of the 10 stations of the CDSN.
2. Both sides recognize the complex problem of satellite telemetry of CDSN data and both sides agree to work toward a mutually satisfactory solution of this problem.
3. The USGS agrees to provide the SSB, on a more timely basis, data from the worldwide network of digital seismic stations. This data will be provided on magnetic tape within approximately three months of original recording.
4. The USGS agrees to assist the SSB in the development and training of specialists in the application of digital seismic data in research and operations.

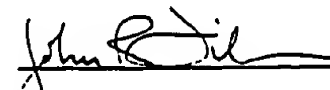
Signed:

 Gu Ping, PRC Side

State Seismological Bureau.

Date: Mar. 28 1992

Signed:

 John R. Dill USA Side
United States Geological Survey.

Date: 3 March 1992

EQUIPMENT AND SOFTWARE TO BE SUPPLIED AT THE CUSH STATIONS & DNC
as part of the
SUPPLEMENT REGARDING CHANGES IN SEISMIC EQUIPMENT AND ADDITIONAL MATTERS
to the

AGREEMENT-IN-PRINCIPLE

Between the
STATE SEISMOLOGICAL BUREAU (SSB) OF THE PEOPLE'S REPUBLIC OF CHINA
and the
UNITED STATES GEOLOGICAL SURVEY (USGS),
under Annex I of the Earthquake Studies Protocol, for
UPGRADES TO THE CHINA DIGITAL SEISMOGRAPH NETWORK (CDSN)

This list of equipment and software is for 11 stations (10 operational stations
plus one spare). THE ACTUAL EQUIPMENT & SOFTWARE SUPPLIED WILL DEPEND ON
COST, AVAILABILITY, AND EXPORTABILITY.

QTY	DESCRIPTION	MANUFACTURER	UNIT COST	TOTAL COST
SEISMOMETERS:				
Standard seismometers:				
11	VIBR Mtd. kit for 1 STS-IV & 2 STS-III Seismometers	Streckeisen	\$ 4,000	\$ 44,000
1	VIBR Mtd. kit for 1 KS-60000 Seismometer	Indolyne-Geotech	6,000	6,000
Optional seismometers: (the option to be exercised, if any, will be decided by USGS & SSB)				
Option 1 (7.0%): Very Short Period Seismometers and Accelerometers (3 stations only - use existing VSP at other 1 sites):				
3	VSP SEISMOMETERS AND ACCELEROMETERS:	Indolyne-Geotech	\$20,000	\$ 60,000
3	GS-14 Seismometer, Vertical			
6	GS-13 Seismometer, Horizontal			
	Modifications to existing CDSN SP amplifiers to change from 10 Hz to 25 Hz corner frequency			
Option 2 (0%): Low Gain Seismometers and Accelerometers (5 stations only plus 1 spare):				
6	LOW GAIN Force balance accelerometer, 2g	Kennametrics	\$ 3,000	\$ 18,000

(Note: Each station processor has 6 channels. Three of these channels
are always used for the STS VIB seismometers. Only three channels are
available for connection to optional seismometers. Therefore, any one
station can have either the VSP option or the LG option, but not both.)

QTY	MODEL	DESCRIPTION	MANUFACTURER	UNIT COST	TOTAL COST
DATA LOGGING EQUIPMENT & SOFTWARE:					
Data Acquisition (DA) Module:					
11	CU80/UX-GC	6-channel Data Acquisition System with with GPS clock and sine wave calibration	Quanterra	\$38,300	\$422,400
11	Module	Application Software	Quanterra, ASI	(- included -)	
Data Processing (DP) Module:					
11	M114701S155C3	VME Microprocessor System, 220 VAC, 50 Hz	Motorola	\$17,045	\$190,295
11	HW8945B-1	Enclosure with 220V Power Supply	Motorola		
11	HW81475A-1	Processor with 8MB DRAM (25 Mhz)	Motorola		
11	HW8712A/B	Transition Module	Motorola		
11	HW853F-5	Tape and Disk Drives	Motorola		
11		Application Software	Quanterra, ASI	(- included -)	
11		System license for OS-9 Operating System & Supporting Software:	Microware	\$2,000	\$22,000
22	IRU68MA201.1	Professional OS-9/68020/30 for DA & DP			
11	PCI.68NA681.1	Pascal Compiler for DP			
11	ESP.68NA681.1	Ethernet Support Package for DP			
DP Accessories:					
11	MZ-8300	Quad Serial Board with 60 Facuplate	Hizar	\$495	\$5,445
22	MZ-6610	DAC board	Hizar	\$995	\$21,890
22	8300-CB	Cable	Hizar	\$75	\$1,650
11	GA-215	Graphics Terminal, 220V/50Hz power	Graphon	\$1,147	\$12,617
11	KX-P1191	Printer, Graphics, with Serial I/O	Panasonic	\$250	\$2,750
11	SRHF 024-1-20	Battery Charger, 24V/20A	Exide	\$1,805	\$19,855
22	PHC-1290X	Battery, 12V, 90 Amp-Hour	Power Battery Co.	\$190	\$4,180
33	KS232E	Lightning Protector for RS-232 Port	Gen. Semicond.	\$67	\$2,211
11	KS422E	Lightning Protector for RS-422 Port	Gen. Semicond.	\$70	\$858
Analog Display: Laser Printer:					
11	33481AD	Laser printer, 220V/50Hz Power, with PostScript cartridge, 2 MB memory, parallel interface	Hewlett Packard	\$3,000	\$33,000

UNIT COST \$ 926 TOTAL COST \$ 10,186

MANUFACTURER

QTY MODEL DESCRIPTION

DATA LOGGING EQUIPMENT & SOFTWARE (continued):
Data Accessories (continued):

11 Enclosure (Rack)
11 Basic Cabinet
11 Side Panel (Pair)
11 D-6119-LM Solid Metal Door
11 20-2119-LM Acrylic Door
44 P-0319 3.5" Panel
33 P-0819 8.75" Panel
11 HM-68 Leveling Feet (set)
11 PO-0712 Power Output Strip
Colors: White #931 for Bezel and Acrylic Door Frame.
Blue #216 for Top, Base, Sides, Panels, & Door.

The following telemetry links will be necessary at some stations
(5 optical + spare MUXes, 1 RF) depending on DA-DP separation:

6 ODS-302-G 8-Channel RS-232 Asynch. Optical MUX, Opt. Data Sys. \$ 1,400 \$ 7,200
6 ODS-302-G "ST" connector, 220V/50Hz power Opt. Data Sys. \$ 1,400 \$ 9,600
5 "ST" connector, 24 VDC power (ASL) \$ 1,800 \$ 9,000
Fiber Optic Cable, 1000 foot length,
with pulling eye at each end,
REMEX 12-06-1-PI/06EX-06EX
\$10,000 \$ 10,000

1 RF link for HJI Any

Station parts, supplies, tools, & test equipment:

11 Station spare parts & supplies (ASL) \$ 1,500 \$ 75,000
11 Station tools, test equipment (ASL) \$ 5,000 \$ 50,000

STATION DATA ANALYSIS EQUIPMENT & SOFTWARE:

(Note: At three stations, the existing Sun 4/65GX-8 workstations installed under the GSE program will be used. Seven more Sun workstations plus a spare will be provided for the other seven stations.)

8 Sun Workstation, Model 11C or equivalent, with laser printer and analysis software Sun \$21,000 \$168,000

MANUFACTURER

QTY MODEL DESCRIPTION

DATA MANAGEMENT CENTER (DMC):

The existing CDSN DMC will be maintained until September 30, 1992, at which time maintenance of this equipment will become the responsibility of SSR.

The GSE National Data Center (NDC) equipment will be upgraded with hardware and software necessary to read the DC600HC tape cartridges generated by existing CDSN stations and to read the SEED-format tape cartridges to be generated by the upgraded stations.

1 Labor, software, and equipment necessary to modify GSE NDC to process old-type and new-type CDSN tape cartridges, and to function as the new CDSN DMC (ASL)

UNIT COST

\$25,000

\$ 25,000

TOTAL COST